

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Yoshihiro TSUCHIYA, Satoru ARAKI, Masashi SANO,
Takumi UESUGI

Application No.: New U.S. Patent Application

Filed: January 26, 2001

Docket No.: 108337

For: MAGNETIC TRANSDUCER, THIN FILM MAGNETIC HEAD, METHOD OF
MANUFACTURING MAGNETIC TRANSDUCER AND METHOD OF
MANUFACTURING THIN FILM MAGNETIC HEAD



INFORMATION DISCLOSURE STATEMENT

Director of the U.S. Patent and Trademark Office
Washington, D.C. 20231

Sir:

Pursuant to 37 CFR §1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. Unless otherwise indicated herein, one copy of each reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

- ☒ 1. This Information Disclosure Statement is being filed (a) within three months of the U.S. filing date, OR (b) before the mailing date of a first Office Action on the merits in the present application. No certification or fee is required.
- ☒ 2. An English-language Abstract of the non-English language reference is attached hereto.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "James A. Oliff".

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IDS (Translation of Abstract for Japanese Application No Hei11-227530)

Provided are a magnetic transducer capable of increasing a resistance change and obtaining an appropriate coercive force, a thin film magnetic head, a method of manufacturing a magnetic transducer and a method of manufacturing a thin film magnetic head.

A stack comprising a spin valve film has a stacked structure comprising an underlayer, a first soft magnetic layer, a second soft magnetic layer, a nonmagnetic metal layer, a ferromagnetic layer, an antiferromagnetic layer and a protective layer, which are stacked in this order on the underlayer. Electrical resistance changes according to a relative angle between the orientation of magnetization of the ferromagnetic layer and the orientations of magnetizations of the first and second soft magnetic layers. A soft magnetic interlayer having magnetism and having higher electrical resistance than the electrical resistance of the first soft magnetic layer is formed in the first soft magnetic layer. When a current passes through the stack, electrons are reflected by a surface of the soft magnetic interlayer. Thus, a path for the electrons is narrowed, and therefore the rate of resistance change increases.

AFM
FM-PIN
NMI
SM 2
SM 1
UL

Form PTO-1449 (REV. 8-83)		US Dept. of Commerce PATENT & TRADEMARK OFFICE		ATTY DOCKET NO. 108337		APPLICATION NO. New U.S. Patent Application <div style="font-size: 1.5em; font-family: cursive;">09/769,760</div>	
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				APPLICANTS Yoshihiro TSUCHIYA, Satoru ARAKI, Masashi SANO, Takumi UESUGI			
				FILING DATE January 26, 2001		<div style="font-size: 1.5em; font-family: cursive;">2653</div>	

U.S. PATENT DOCUMENTS						
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS

JCB83 U.S. PTO
 09/769760
 01/26/01

FOREIGN PATENT DOCUMENTS						
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS
GL		JP 11-227530 (w/abstract)	08/11/1999	Japan	—	—

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)	
GL	"CoFe SPECULAR SPIN VALVES WITH A NANO OXIDE LAYER", Kamiguchi et al., 1999 Digests of INTERAMG

EXAMINER <div style="font-size: 1.2em; font-family: cursive;">GEORGE LETSCHER</div>	DATE CONSIDERED <div style="font-size: 1.2em; font-family: cursive;">4/24/03</div>
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Examiner: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.